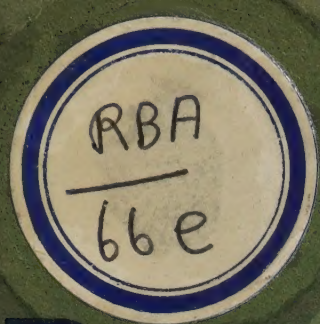
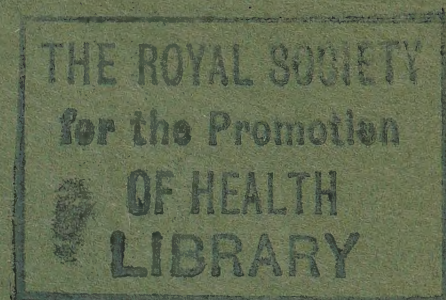


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Public Health Laboratory Service



1967
YEAR BOOK

including Annual Report for 1966

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THE PUBLIC HEALTH LABORATORY SERVICE BOARD

During 1966 one new member of the Board was appointed – in succession to Professor C. H. Stuart-Harris, whose term of membership came to an end on 31st July. The new member is Professor N. P. L. Wildy, Professor of Virology and Bacteriology, University of Birmingham.

THE PUBLIC HEALTH LABORATORY SERVICE BOARD

(1 9 6 7)

Chairman: E. T. C. Spooner, C.M.G., M.D., F.R.C.P.

(Dean, London School of Hygiene and Tropical Medicine,
London, W.C.1)

Members: A. H. Clough, C.M.G., O.B.E.

(late Under Secretary, H.M. Treasury)

Professor A. C. Cunliffe, M.D., F.C.Path.

(Professor of Bacteriology, University of London, at King's
College Hospital Medical School, London, S.E.5)

Professor A. W. Downie, M.D., D.Sc., F.C.Path., F.R.S.

(Emeritus Professor of Bacteriology, University of Liverpool)

A. A. Driver, M.D., D.P.H.

(Senior Administrative Medical Officer, Leeds Regional
Hospital Board)

J. Stevenson Logan, M.B., Ch.B., D.P.H.

(Medical Officer of Health, Southend-on-Sea, Essex)

J. R. McGregor, C.B., C.B.E., M.C.

(late Director of Finance, War Office)

R. M. Shaw, M.B., D.P.H.

(Deputy Chief Medical Officer, Ministry of Health)

Charles C. Stevens, LL.B.

(Member of Manchester Regional Hospital Board; Chairman,
Macclesfield and District Hospital Management Committee)

J. F. Warin, M.D., D.P.H.

(Medical Officer of Health, Oxford)

G. I. Watson, M.D., D.T.M. & H.

(Medical Practitioner, Peaslake, Surrey)

Professor N. P. L. Wildy, M.B., M.R.C.S., F.R.S.E.

(Professor of Virology and Bacteriology, University of Birmingham)

Professor R. E. O. Williams, M.D., B.Sc., F.R.C.P., F.C.Path.

(Professor of Bacteriology, University of London, at the
Wright-Fleming Institute, St. Mary's Hospital, London, W.2)

Staff Assessors to the Board:

B. Moore, M.D., B.Sc., F.C.Path., B.A.O.

Mrs. J. Taylor, M.B., B.Sc., F.C.Path., D.P.H.

Secretary:

D. V. T. Fairrie, C.B.E., F.C.A.

HEADQUARTERS ADMINISTRATIVE OFFICE

24, Park Crescent, London, W.1

Tel.: Museum (STD 01 636) 2223

J. W. Howie, M.D., P.C.Path., F.R.C.P., Q.H.P. (*Director of the Service*)

J. C. Kelsey, M.D., M.C.Path., Dip.Bact. (*Deputy Director of the Service:
see also p. 27*)

D. V. T. Fairrie, C.B.E., B.A., F.C.A. (*Secretary of the Board*)

R. H. Westlake (*Finance Officer and Deputy Secretary of the Board*)

S. W. H. Aust (*Accountant and Supplies Officer*)

J. W. Bushell (*Establishments Officer*)

* A. Waltho (*Officer in Charge*), MRC Central Store, Colindale Avenue,
London, N.W.9. Tel.: Colindale (STD 01 205) 0071

* Member of the Staff of the Medical Research Council.

INTRODUCTION

ADMINISTRATION AND ORGANISATION OF THE SERVICE

The Public Health Laboratory Service is the successor of the Emergency Public Health Laboratory Service planned, organised and administered during the war years 1939–1945 by the Medical Research Council, at the request of H.M. Government. In 1945 it was decided by the Government to retain the Service on a permanent footing. Statutory authority was provided by Section 17 of the National Health Service Act, 1946, which empowered the Minister of Health to provide a “bacteriological service” for the control of the spread of infectious diseases. Later the Medical Research Council agreed to an extension of the period of their administration, with the delegation of detailed responsibility to the Public Health Laboratory Service Board appointed by them for this purpose. In 1960, however, the Public Health Laboratory Service Act, 1960, established and incorporated a new Public Health Laboratory Service Board as a statutory body capable of acting in its own right as agent for the Minister. The Act also provided for the transfer of staff of the Service from the employment of the Council to that of the Board, and the transfer of property from the Council to the Minister of Health; these transfers took effect on 1st August, 1961.

The Chairman and members of the Public Health Laboratory Service Board are appointed by the Minister of Health and, in accordance with the Schedule to the Act, the members must include the following (and must therefore be at least eight in number, in addition to the Chairman):

- (a) not less than two persons appointed after consultation with the Medical Research Council;
- (b) not less than two persons with experience as bacteriologists, appointed after consultation with such organisations as the Minister thinks appropriate;
- (c) not less than two persons holding office as medical officer of health to a local authority;
- (d) not less than one person appointed after consultation with such organisations as appear to the Minister to represent the hospital service;
- (e) not less than one fully registered medical practitioner engaged in general medical practice, appointed after consultation with such organisations as the Minister may recognise as representative of practitioners so engaged.

The Chairman and members of the Board are normally appointed for a term of three years.

The Board exercises its functions in accordance with any directions received from the Minister of Health. In the exercise of these functions it acts as a principal.

The staff of the laboratories of the Service are appointed and employed by the Board. The directors of the constituent laboratories are whole-time medically qualified bacteriologists, with full consultant status. Professional staff are selected to a large extent from newly qualified medical graduates after they have held house appointments for 12 months or longer, they then receive 5 years' training in pathology and bacteriology. During the third year the trainee is required to obtain the Diploma in Bacteriology of the University of London or of the University of Manchester. The Service also receives fully trained recruits from the Hospital Service and from the universities. As a general rule, science graduates without medical qualifications are employed only in the reference laboratories (see page 27) where the work is of a highly specialised nature.

The technical staff of registered medical laboratory technicians are recruited from boys and girls leaving school at 16 to 17 years of age, who have attained the necessary standard of education; they go through a 5-year apprentice system of training, as is becoming general at pathological laboratories throughout the country.

The development of the Service between 1946 – in which year it was established in its present form – and 1966 may be summarised as follows:

	1948	1955	1962	1966
Number of Constituent				
Laboratories	36	56	59	61
Medical staff	84	124	132	134
Scientific staff		26	39	57
Technical, Clerical and Maintenance staff	562	778	956	1,126
Total specimens examined	793,314	1,689,033	2,314,126	2,971,486

At first the material received at the laboratories consisted of sanitary specimens – milks, water, foodstuffs, etc. – and specimens of human and animal origin sent in for bacteriological examination. In 1956, however, after a field trial of the Salk poliomyelitis vaccine carried out with the help of the laboratories of the Service under the aegis of the Medical Research Council, attention was increasingly directed to the examination of specimens for virus infection. By 1958 the majority of the laboratories were able to offer the virus diagnostic service which is now general, and also to provide effective investigation and control of epidemics arising from virus infections, and to give advice about their control. In 1966 82,859 virus specimens were examined.

In the early post-war years most of the constituent laboratories were housed in temporary accommodation provided by County Councils, County Borough Councils, University departments and hospitals; a few were in huts or converted houses. However, a programme was soon established for the provision of permanent buildings, designed for their purpose, and sited conveniently for the areas served. It was decided by the Ministry of Health in 1946 that, when-ever possible, public health laboratories should in future be situated in

hospital compounds, as the need for the integration in the Service of public health and hospital bacteriology became generally recognised. After the Regional Hospital Boards had come into operation, this led to the establishment of the joint public health and hospital laboratories, which have subsequently become a developing feature of the organisation of the Service. At the present time nearly all major projects for new buildings are of this nature, and the building programme is linked to that of the Ministry of Health for new hospitals.

The Central Laboratory of the Service is situated at Colindale, London, N.W.9, and contains a number of reference and specialist departments, including a diagnostic laboratory which, in addition to acting as a laboratory of "first reference" for bacteriological and virological specimens, receives routine work from the adjacent area of Middlesex. There are three affiliated laboratories at Coppett's Wood, Edmonton and Neasden receiving routine public health work from their areas.

There are 61 constituent laboratories in England and Wales, together with 3 "recognised" ones (see page 30) – these latter being hospital pathological laboratories which undertake the examination of sanitary specimens for the Service in areas where facilities of a constituent laboratory are not available, or are available only at a long distance with considerable inconvenience. In addition, a number of consultant bacteriologists employed by Regional Hospital Boards in the Hospital Service are associated on a part-time basis with the Public Health Laboratory Service. (see page 30).

The total of 61 constituent laboratories includes the following 9 regional ones: Bristol, Cambridge, Cardiff, Leeds, Liverpool, Manchester, Newcastle upon Tyne, Oxford and Sheffield. These regional laboratories, most of which are staffed by three to five medically qualified workers, together with junior bacteriologists in course of training, act to some extent as parent laboratories to a group of area laboratories. Help is provided in the handling of special—e.g. epidemiological—enquiries, and in the provision of staff substitutes during periods of leave or illness.

SCOPE OF THE SERVICE

The function of the Service is to make a continuous study of how communicable microbial diseases are spread and what advice may be offered about their control; thus its work is essentially bacteriological, virological and epidemiological, the aim being to apply in these fields – on a national scale – the outlook and methods of a research team to the day-to-day problems of infections as they are met in ordinary life. Apart from certain tests closely associated with bacteriological and virological investigations, chemical and biochemical tests and histological examinations are not performed. Except by special arrangement the Service does not undertake work that is rightly within the province of the hospital or clinical pathologist, but it is ready to offer help when facilities for such work are not otherwise available.

All specimens must be submitted by doctors, veterinarians, dentists,

public health inspectors, and others acting on behalf of medical officers of health, Government departments, or representatives of other official bodies; specimens cannot be accepted from private persons (see, however, subparagraph (b) below).

The routine specimens fall under two main heads:

- (a) "Medical" specimens received from medical practitioners, infectious diseases hospitals and local authorities. These are specimens of sputum, faeces, throat swabs, blood samples, etc., taken for diagnostic examination from persons suspected of suffering from infectious disease. Medical officers of health, school medical officers, general practitioners – the latter where geographically practical – and others are offered a comprehensive service for the diagnosis, treatment and prevention of bacterial, virological and mycological infections. Medical practitioners are welcomed at all times in the laboratories for the purpose of consultation.
- (b) "Sanitary" specimens: these are received from medical officers of health, public health inspectors, and others concerned officially with the control of the public health. They comprise specimens for bacteriological examination of water, shell-fish, watercress, sewage, milk and cream; of processed foods such as ice-cream, artificial cream and canned foods; and of imported products such as the various forms of meat, fish, processed egg, coconut and fertiliser. The Service normally examines only material offered to the consumer, but will, of course, examine specimens taken at any stage of production or distribution by medical officers of health investigating suspected food-borne infections. The Service is ready to give free advice to food manufacturers and processors to assist them in the production and distribution of bacteriologically safe products. For routine control of such products, commercial firms are charged a fee, but work of this sort is undertaken only exceptionally.

The epidemiological work of the Service includes not only the investigation of outbreaks of infectious disease, in co-operation with local medical officers of health, but also studies of the distribution and behaviour of infectious agents throughout England and Wales, and of the various aspects of the immunisation programme. Epidemiological information is collected centrally week by week from public health and hospital laboratories all over the country, including Scotland, Northern Ireland and Eire and then made available to each of these laboratories in return in the form of a confidential weekly summary.

Field investigations of infectious disease, and field trials of protective agents, including vaccines, are frequently carried out. All laboratories are engaged to some extent in research in addition to routine work.

A special feature of the Service is the investigation of various problems by Working Parties containing a dozen or more members drawn from laboratories in different parts of the country. Some of the problems investigated

are of direct concern to Government Departments, with which close working relations have always existed.

In addition to normal public health work, an increasing number of laboratories of the Service are undertaking responsibility for clinical bacteriology at hospitals. Arrangements of this kind, involving the association of a public health laboratory with the pathological laboratory of a hospital, provide many advantages, and are frequently requested by hospital authorities. They are readily accepted on condition that there is also a need for public health laboratory facilities in the area.

Brief mention has already been made of the reference laboratories and specialist departments. These provide facilities for the exact identification and "finger-printing" of organisms belonging to many different groups. This is sometimes required by clinicians in their treatment of patients, but more often for epidemiological purposes. The reference laboratories are open freely for use by any laboratory within or without the Service. In addition, a number of reference experts are retained for the examination of occasional specimens which require special skill, special knowledge, or special reagents.

General information about the current work of the Service, together with contributions from other workers in related fields, is published in the joint *Monthly Bulletin of the Ministry of Health and the Public Health Laboratory Service* which is issued, free of charge, to all medical officers and Bacteriologists concerned with epidemiology and public health. The section of this publication which is concerned with the activities of the Service is edited by Dr. J.C. Kelsey of the Central Public Health Laboratory, Colindale Avenue, London, N.W.9. For those who do not receive a free copy, the *Monthly Bulletin* may be purchased at 1s. 6d. a copy through the Ministry of Health.

The Service distributes various vaccines and sera on behalf of the Ministry of Health. It also provides certain reagents for diagnostic purposes, prepared by or issued from the Standards Laboratory for Serological Reagents at the Central Public Health Laboratory, Colindale Avenue, London, N.W.9 (*see page 29*).

GRANTS AND OTHER ASSISTANCE RECEIVED FOR SPECIAL INVESTIGATIONS

The Public Health Laboratory Service Board now receive valuable assistance from the Departmental Research and Development Fund of the Ministry of Health. Allocations from this fund have enabled the Board to undertake the following important projects, involving research work of an 'operational' nature:

A study of the use of a computer for the identification of bacteria.

The establishment of a special laboratory for the study and typing of mycoplasmas — this being a necessary preliminary step towards

the provision by the Service of reference facilities for these organisms.

The purchase of an auto-analyser for experimental work on the use of this apparatus in the field of bacteriology.

Laboratory investigations into farmers' lung.

Research into rubella and the use of gamma globulin.

An investigation of laminar flow ventilation and the determination of its effectiveness in protecting hospital patients who are at special risk to cross-infection.

The Board also receive grants from the following bodies for the assistance of special investigations and the acquisition of major equipment of a special nature :

(a) From the World Health Organisation :

\$3,500 for the assistance of laboratory research on enteric phage-typing at the International Centre recognised at the Enteric Reference Laboratory, Colindale, London.

\$3,500 for the International Shigella Centre recognised at the Dysentery Reference Laboratory, Colindale, London.

\$3,000 for the International Reference Centre for Staphylococcal Phage-typing recognised at the Cross-Infection Reference Laboratory, Colindale, London.

\$3,000 towards the cost of testing the specificity of virus antisera at the Standards Laboratory for Serological Reagents, Colindale, London.

\$2,500 for the preparation and testing of reagents (rhinovirus), at the Virus Reference Laboratory, Colindale, London.

\$3,000 towards the cost of epidemiological serological investigations of tropical sera for antibodies in treponematoses at the Venereal Diseases Reference Laboratory, London Hospital Research Laboratories, London.

(b) From the Medical Research Council :

A grant of £11,698 a year for two years for a second survey into the pattern of infection in acute respiratory virus diseases, £3,370 a year being for a study in collaboration with general practitioners and £8,328 a year for a study in association with the Council of children in hospital.

Grants have been received by the following individual members of the Board's staff:

(a) From the Medical Research Council :

Dr. L. Hoyle (Director, Public Health Laboratory, Northampton).

Provision for scientific assistance for research into chemical reactions of myxovirus proteins.

Dr. I. G. Murray (Director, Mycological Reference Laboratory, London School of Hygiene and Tropical Medicine).

Provision for research in serological methods in the classification of pathogenic fungi and in the diagnosis of mycoses.

Dr. T. M. Pollock (Director, Epidemiological Research Laboratory, Colindale, London).

Further provision for an investigation to evaluate gamma globulin in prevention of congenital malformations due to rubella and undefined infections in early pregnancy.

Dr. P. G. Higgins (Virologist, Epidemiological Research Unit, Cirencester).

Provision for research into the application of organ cultures to the diagnosis and epidemiology of virus infections in the general community.

Dr. S. P. Lapage (Curator, National Collection of Type Cultures, Colindale, London).

Provision for research in the analysis of genetic material of the bacterial cell.

In addition to the provision of research grants described above, two research projects are in progress jointly with the Medical Research Council, in which members of the Council's scientific staff are collaborating. These are as follows :

Research work on viruses at the Epidemiological Research Unit, Cirencester, Gloucestershire ;

Various studies at the Cross-Infection Reference Laboratory, Colindale Avenue, London, N.W.9.

Laboratory Directors of the Service are also carrying out investigations in conjunction with general practitioners and hospital medical officers, in many places, notably in the study of chronic bronchitis, of hospital cross-infection and of sterilisation and disinfection problems ; on gastro-enteritis and the safety of various foods.

A clause of the Schedule of the Public Health Laboratory Service Act, 1960 permits the Board to accept, hold and administer private gifts on trust for any purpose related to the Public Health Laboratory Service or otherwise connected with bacteriological research.

REVIEW BY THE DIRECTOR OF THE SERVICE OF ACTIVITIES IN 1966

LABORATORIES

A new joint Laboratory was opened on 1st September at St. George's Hospital, Tooting Grove, S.W.17, under the directorship of Dr. D. G. Fleck. In April the Mycoplasma Reference Laboratory was opened at Colindale. This Laboratory, whose Director is Dr. B. E. Andrews and whose Deputy-Director is Dr. R. H. Leach, was set up with money from the Research Funds of the Ministry of Health. The Laboratory at Exeter moved to its new building in Church Lane in June; and the Salisbury Laboratory moved to new premises in December.

STAFF

Obituary

The sudden deaths of two members of the Staff are recorded with deep regret: Dr. K. Machacek, Director of the Public Health Laboratory at Coppett's Wood, aged 60 years; and Mr. J. D. Atkinson, M.B.E., Senior Technical Officer at the Central Public Health Laboratory, aged 61 years. With regret we also record the deaths of Lt. Colonel H. J. Bensted former Director of the Standards Laboratory, and later Director of the Central Public Health Laboratory; and Dr. J. L. G. Iredale, former Director of the Public Health Laboratory, Derby, who died suddenly, on 19th August 1966, six months after his retirement.

Retirements and Resignations

Dr. J. M. S. Dixon, Director at Ipswich since 1959, left the Service to take up an appointment as bacteriologist to two hospitals in Toronto, Canada on 2nd April 1966.

Dr. R. Irene Hutchinson, Director at Southampton since 1947, retired on 28th January 1966.

Dr. E. M. Mackay-Scollay, Director at Stafford since 1956, left the service to take up an appointment in Western Australia as Head of the Microbiological. Department of the State Public Health Laboratory Service on 27th February 1966.

Appointments

Dr. B. E. Andrews was appointed Director of the new Mycoplasma Reference Laboratory at Colindale.

Dr. D. G. Fleck was appointed Director of the new Laboratory at St. George's Hospital, Tooting Grove, S.W.17.

Dr. P. K. Fraser was appointed to succeed Dr. J. M. S. Dixon as Director of the Ipswich Laboratory.

Dr. J. M. Graham was appointed to succeed Dr. R. Irene Hutchinson as Director of the Southampton Laboratory.

Dr. W. L. Hooper was appointed to succeed Dr. E. M. Mackay-Scollay as Director of the Stafford Laboratory.

Dr. G. C. Turner was appointed to succeed Professor D. T. Robinson as Director of the Liverpool Laboratory.

Dr. Joan M. B. Edwards was appointed Deputy Director of the Standards Laboratory for Serological Reagents, Colindale.

Dr. P. W. W. Griffiths was appointed Deputy Director of the Public Health Laboratory, Conway. Dr. R. H. Leach was appointed Deputy Director of the Mycoplasma Reference Laboratory, Colindale. Dr. D. L. Miller was appointed Deputy Director of the Epidemiological Research Laboratory, Colindale.

Locums

We are most grateful to the following for help with locum duties:- Professor H. B. Maitland at Taunton; Dr. R. Norton at Hull; Drs. J. P. P. Mackey and D. Riding at Bath; Dr. B. R. Sandiford at Preston; Dr. Herta Schwabacher at Watford; Dr. R. L. Vollum at Chester, Maidstone, and Southampton.

Secondments abroad

Dr. P. G. Mann returned to this country after over two years' secondment in Addis Ababa from early October 1964, as adviser to the Central National Laboratory for the Government of Ethiopia.

Visits Abroad

Dr. I. G. Murray attended a conference in Paris by invitation of la Société française de Mycologie Médicale to deliver a paper at the Pasteur Institute. By invitation of the International Atomic Energy Agency, Dr. J. C. Kelsey attended a meeting of international experts in Vienna to consider "Radio-sterilisation of Medical Devices, Pharmaceuticals and Bioproducts". By invitation of the Pugwash Committee, Dr. C. E. D. Taylor attended a meeting of a small group of experts in Stockholm to discuss the feasibility and possible scope of the Conference, to be convened by the Swedish Pugwash Group, on methods for rapid and ultrasensitive detection and identification of bacteria and viruses. Dr. Taylor also visited the Public Health Laboratory in Stockholm. On the invitation of the World Health Organization Dr. K. Patricia Carpenter visited India to collaborate with Dr. S. Mukerjee at the International Centre for Vibrio Phage Typing, Calcutta, and Dr. D. L. Shrivastava at the Cholera Research Centre of the Indian Council of Medical Research, Calcutta, and to visit other cholera research centres. Dr. B. E. Andrews attended the 2nd Conference on the Biology of Mycoplasmas in New York, under the auspices of the New York Academy of Science. Dr. E. S. Anderson visited Geneva to give a lecture on the transfer of drug resistance to the Institute of Molecular Biology at the University of Geneva. Under

the auspices of the World Health Organization, Dr. C. M. Patricia Bradstreet visited various workers in the U.S.A. to discuss problems relating to the preparation of viral and bacterial diagnostic reagents and skin test antigens. Dr. B. Moore went to Boston to visit bacteriology and virology laboratories during a private visit to the U.S.A. Dr. Betty C. Hobbs attended the 2nd International Congress on Food Science and Technology in Warsaw, Poland, to talk in the section on foodborne infection and intoxication, with special reference to investigation, source and control. Dr. C. M. Patricia Bradstreet attended the 4th International Conference on Sarcoidosis in Paris. Miss Jenifer R. Midgley visited Brno, Czechoslovakia to take part in the decennial celebration of the Czechoslovakian Collection of Micro-organisms. At the request of the Ministry of Overseas Development, Dr. A. J. H. Tomlinson attended a meeting in Ankara to discuss the report of the study designed to collect information on immunisation against communicable disease in the area of the Central Treaty Organisation – Turkey, Iran, and Pakistan. By invitation of Professor V. B. D. Skerman, Dr. A. D. Macrae attended a UNESCO meeting in Paris on Culture Collections. Dr. Yvonne E. Cossart and Dr. J. O'H. Tobin attended the XIth Symposium in Rome on Poliomyelitis and Allied Diseases. Dr. E. S. Anderson accepted an invitation of the French Society of Microbiology to visit Paris to give a paper on transferable drug resistance at a Colloquium on Present Aspects of Microbial Resistance. Dr. I. G. Murray accepted the invitation of the World Health Organization to visit the Sudan in the capacity of Consultant in Medical Mycology. Dr. W. H. H. Jebb visited Geneva by invitation of the Chief of the Environmental Pollution Division of Environmental Health of the World Health Organization, to help with a report which will review trends of pollution, summarise the goals of research, and provide recommendations and information generally about the work which requires to be done in this field. Dr. C. M. Patricia Bradstreet accepted an invitation from the World Health Organization to attend a meeting in Moscow of the WHO Respiratory Virus and Enterovirus Reference Centres. Seventeen members of the P.H.L.S. attended the IXth International Congress for Microbiology in Moscow in July of this year.

Visiting Workers

Many visitors spent periods at the Laboratories at Colindale, Carmarthen, Gloucester, Guildford, Liverpool, Luton, Manchester, Newcastle and Plymouth, and at the Leptospirosis Reference Laboratory.

ROUTINE WORK OF THE SERVICE

In the year 1966, the 61 regional and area laboratories of the Service examined 2,971,486 specimens. Of these 82,859 were virological specimens, which involve a good deal more time and trouble than others. The significant pathogens isolated from this work, as well as those reported to us by 400 hospital laboratories, provide the basis of the Weekly Summary, issued from the Epidemiological Research Laboratory, Colindale. The form of this Weekly Summary and how the best use might be made of it are being discussed by a Working Party of the Staff Committee. The report is expected

during 1967. Meantime, it is important to emphasise that this regular routine work is the basis of everything which the Service attempts to do in the way of defining and investigating the communicable disease situation in this country. Apart from the use which the Service itself often makes of the routine reports as a starting point of investigations of every kind, the recipients of our reports rely upon them for the essential day-to-day measures of prevention, control, and treatment of communicable diseases. It is important to remember that this is the basic work of the Service. Nevertheless, this routine is valuable only if it is done to the highest technical standards and if every possible effort is made to extend it to the fullest extent that may seem useful both by finding out what may lie behind the submission of a particular specimen or what further investigation or advice may be called for as the result of a particular finding or report. This means that the members of the Service need to cultivate a more than usually close and understanding relationship with those who ask us to examine specimens for them. Without this extra effort the "routine" work of the Service would soon become "mere routine" and the whole distinctive point and character of our work would be in danger of being lost.

Another important and distinctive feature of the work of the Service is the amount of thought and work that goes into the maintenance of reliable and reproducible technical methods. Often by deliberate decision of the Staff Committee, but also informally by personal exchanges among Directors, the reliability and reproducibility of methods is assessed by exchanges of information and material. When significant results are discovered the insights are shared by publication of papers, circulation of technical memoranda, or short discussion at meetings of the Staff Committee. This rather informal type of quality control is important, especially if the results of our sampling of the communicable disease situation are likely in the future to be more systematically recorded and analysed. In this particular aspect of our routine work, the Reference and Special Laboratories play a substantial part (in addition to their other functions as investigators and reference experts), but a Regional or an Area Laboratory quite often provides the stimulus which initiates either the introduction of a new method or the revision of an old one. In the future it may become desirable to institute some systematic arrangement for keeping our methods at the high level necessary to ensure that our routine work is of more than average usefulness.

SCIENTIFIC WORK

The Rubella Project

Primarily, interest in rubella and especially its prevention is based on: (a) the knowledge that the causative virus, as a result of maternal infection early in pregnancy, can spread to and multiply in the embryonic tissues, the effects of this often being manifest in the child after birth in the shape of congenital abnormalities; and (b) the assumption that virus is unlikely to infect the embryo, despite any exposure of the mother to the disease after conception, if she already has natural immunity due to past infection. The current and rather costly practice of giving gamma globulin to all mothers

claiming exposure to rubella during the first trimester of their pregnancy is an effort, based on this, to provide temporary passive immunity. Evaluation of its usefulness has been hindered by our lack of information about such variable factors as the immunity status of the recipient and the amount of antibody present in different batches of gamma globulin. Information about these and other problems is needed.

Methods for virus isolation and serological tests are now sufficiently established to make practicable a co-operative investigation by a number of laboratories. A Working Party on Rubella was therefore organised. With the aid of a generous grant from the Research Funds of the Ministry of Health, long-term laboratory and epidemiological studies are in progress.

These will be concerned with three tasks:

(1) To ascertain the levels of rubella antibody in the population of different areas of the country. Serological surveys of the adult female population of child-bearing age will be done first because it is for this group that requests for gamma globulin are made. Evidence is already accumulating in some areas that about 70–90 per cent of such women have immunity to past infection. Whether reinfection of these women is possible and, if it can happen, whether it is of sufficient severity to spread by the blood stream to the embryonic tissues is still not known for certain. Later, similar surveys of younger age-groups in the population will, if possible, be done to provide information on the need, or otherwise, for vaccination on a considerable scale, as and when a potent vaccine becomes available.

(2) To examine gamma globulin for its rubella antibody content. It is not surprising that there should be variability between batches but this means that a standard dose given to patients may have quite unpredictable protective effects. As part of the study, attempts are being made in a small number of young female adult volunteers who lack antibody to determine the amounts of a potent batch of gamma globulin which are necessary temporarily to produce measurable titres of antibody.

(3) In conjunction with a number of general practitioners, to make epidemiological and laboratory investigations of rubella in families.

These are the tasks. A considerable volume of work will be necessary to discharge them; but we hope that the answers will make it worth while.

Whooping Cough Vaccines Investigation

The first trials of whooping cough vaccination in this country were made by the Medical Research Council in 1942. Further series of trials were carried out from 1946 until 1957, but the efficacy of current batches of vaccine has not been recently assessed by field trial. The results of the Medical Research Council trials showed that it was possible, by vaccination, to produce a high degree of protection against whooping cough. From 1954 until 1962 the incidence of whooping cough declined, with the first marked decrease appearing in 1958. It seemed likely that this decline was due to the widespread use of effective vaccines. However, in 1963 and 1964, despite vaccination, the incidence of notified cases increased.

In 1963 Preston pointed out that the current whooping cough vaccines might now be less effective than in former years. More than four of every five of the *Bordetella pertussis* strains currently isolated were of type 1, 3. Most of the pertussis vaccine used until recently contained only type 1, 2, but some contained type 1, 2, 3 also. Before 1958, by contrast, serotype 1, 3 strains were rare and types 1, 2 and 1, 2, 3 *i.e.* the two types contained in the vaccine, predominated.

A Public Health Laboratory Service Committee was set up to ascertain the serotypes responsible for cases of whooping cough and the association between serotypes isolated from cases and those in the current vaccines. The possibility of obtaining this information by a retrospective study was examined in a pilot survey but this method was found to be unsuitable. Accordingly a P.H.L.S. Working Party which included representatives from Scotland was set up and the following investigation was proposed:

- (a) To isolate and identify the serotypes of *B. pertussis* currently responsible for cases of whooping cough in the United Kingdom.
- (b) To examine the vaccination records of cases and contacts to determine which type of vaccine was used.
- (c) To assess the protective efficacy of the vaccines by determining the incidence of whooping cough in vaccinated and unvaccinated home contacts of cases.
- (d) To determine if cases clinically considered to be whooping cough, *i.e.* cases with typical "whoop" or cases of paroxysmal cough with or without vomiting, may be caused by other agents such as *B. parapertussis* or viruses.

With the support of the Medical Officers of Health and local general practitioners, the investigation will be carried out, in the first instance, from 31st October 1966 to 30th April 1967. (i) In the areas selected the general practitioners will be asked to report promptly, if possible by telephone, to the Health Department any suspected cases of whooping cough. The Health Department will arrange for the patient to be visited, specimens to be taken, and clinical details and data on previous pertussis vaccination to be recorded. (ii) In other areas it may be more convenient for the general practitioners to take swabs when the patient is first visited, and the Health Department will be asked to provide data on the previous vaccinations.

The bacteriological and virological work will be carried out in the Public Health Laboratories. Analysis of results will be done at the Epidemiological Research Laboratory, Colindale.

Blackburn Polio Outbreak

In 1965 Poliomyelitis Type 1 struck a town in the north-west of England (Blackburn). The outbreak began at the end of June, when a girl of 18 was admitted to hospital with aseptic meningitis which progressed to paralytic disease, from which she died on July 8th. Poliovirus type 1 was isolated from post-mortem material, but a throat swab taken on first admission to hospital did not yield any virus.

Between July 18th and the end of the month a further six paralytic cases and two non-paralytic cases, were diagnosed, each being confirmed by the isolation of Poliovirus type 1, or by a rise in antibody level to this virus type. The affected patients all lived in the north-east sector of the town in fairly close proximity to one another. On August 3rd the people in this area were given Sabin trivalent vaccine. Six days later the rest of the town was similarly treated; but cases diagnosed as paralytic and non-paralytic poliomyelitis continued to be reported in spite of these procedures during the rest of August and the beginning of September, after which the epidemic seemed to die out. Thus, it appeared at first that the feeding of Sabin vaccine had had little effect on the course of the epidemic. However, extensive laboratory investigations and reassessment of the clinical conditions in the patients indicated that, of the 101 cases admitted to hospital with the provisional diagnosis of poliomyelitis, only 19 could be confirmed as cases of this infection. Of these, 9 were observed before mass feeding of vaccine was begun. The remaining 10 all happened within ten days of its commencement.

Three proven cases were in children under five years of age; seven were in children from five to twelve years; three were in teenagers; and the remaining six were in adults aged between twenty and thirty-four years. The oldest adult was the only paralysed person who has not yet fully recovered. All the patients admitted to hospital had one or more faecal samples and two or more blood samples taken, the first usually on the first day of hospitalisation. Before the feeding of Sabin vaccine and for the short period afterwards poliomyelitis infection was easily confirmed by virus isolation or serological methods *i.e.* either a rise in antibody or a high titre against type 1 virus only. In some of the subsequent cases either only vaccine strains, Coxsackie B 3, 4, or 5, Echo viruses, or β -haemolytic streptococci were found; or investigation did not confirm poliomyelitis type infection. Reassessment of the clinical findings supported the laboratory results. The prompt feeding of Sabin vaccine thus halted the epidemic.

Ten of the Blackburn cases showed no antibodies to any poliovirus before infection. Patients previously immunised with Salk vaccine had only minimal degrees of paralysis which did not persist. The significance of this observation, however, is doubtful as most of the unvaccinated subjects who had some weakness recovered fully within a short time.

In this epidemic the initial case was not recognised as poliomyelitis when first seen. It is also of interest that the widespread use of Sabin vaccine in the country generally has not yet eliminated virulent strains from every community. People in unprotected areas may still suffer severely from poliomyelitis.

A Milk-borne Outbreak due to Salmonella paratyphi B var java

An explosive milk-borne outbreak of gastro-enteritis due to untreated milk broke out in the Blackpool area in July 1965. The causative organism was *Salmonella paratyphi B var java*. It was traced to a cow with symptomless mastitis and systemic infection. Two other cows in the herd had

serological evidence of infection with a similar organism. The incident is of interest for three reasons:-

1. The infecting organism had the serological reactions of *Salmonella paratyphi B* and it typed with the specific bacteriophages. However there are minor biochemical differences which indicate that this organism should be classed with the food poisoning salmonellas, rather than *Salmonella paratyphi B*.
2. The organism was isolated from one cow, and two other cows had serological evidence of infection. This evidence of infection of a cow with *Salmonella paratyphi B* var *java* suggests that closer attention might be paid to the possibility of bovines being the source of human infection with this organism.
3. The extent of the outbreaks was notable because over 879 infected persons were discovered, 388 of them furth of Blackpool. The total of infected patients was probably much greater than this number.

The source of the outbreak was a farm in the Fylde Rural District, a few miles from Blackpool, supplying between 200 and 250 gallons of raw milk each day to households, hotels and boarding houses, caravan and camping sites. Infections were recorded in over twenty counties as far apart as Aberdeen and the south coast of England. As far as is known all the infections were related to Blackpool.

The cow which was shown to be excreting the organism in its milk calved on 24th July and two days later its milk was added to the bulk refrigerated storage tank on the farm. The contaminated milk was bottled and sold on 26th July – the onset of the first case was the 28th July. The organism was isolated from bottled milk and an order for its destruction was enforced because of the danger of introducing into a pasteurisation plant an organism capable of causing human disease. In the event of a fault in pasteurisation a further dramatic spread might have followed.

This is the third milk-borne incident of salmonella food poisoning that the Preston Laboratory has had to deal with in five years. Because of the extent of the outbreak and the dissemination of the organism throughout the country it emphasises yet again the dangers of drinking raw milk.

The Laboratory Diagnosis of Brucellosis

In the past, the florid case of acute brucellosis has rarely presented any problem in its diagnosis. The signs, symptoms, and epidemiology, together with either the isolation of the organism from the blood or a positive agglutination test, made its recognition relatively easy. Unfortunately, in the subacute or chronic stage the blood culture was generally negative and the agglutination titre tended to die away. Usually, therefore, either the diagnosis was missed, if the disease was not borne in mind; or the diagnosis rested on clinical grounds alone. Because the symptoms of the disease are protean and the signs very few, accurate clinical diagnosis is almost impossible. The physicians who were aware of the disease recognised that a condition with an insidious onset characterised by headache, sweating and intermittent low grade pyrexia, backache, anorexia

and joint symptoms – to name the prominent features of the disease – might be chronic brucellosis; but they were unable to confirm their diagnosis by laboratory tests. Recently Drs. Coghlan, Payne and Robertson, three members of the Brucellosis Working Party, in conjunction with Dr. W.R. Kerr of the Veterinary Research Laboratories at Stormont, Belfast, have developed two additional laboratory tests which aid the diagnosis of chronic brucellosis. They have shown that the agglutination test is due to antibodies which reside in the 19S or macro-globulin fraction of the serum. As a rule, these IgM immunoglobulins are present only during the acute stage of the disease and are replaced by the 7S or IgG immunoglobulins during the subacute and chronic stage. The IgG immunoglobulins unless present in large amounts are not detectable by the conventional agglutination test, but they strongly fix complement. Hence in chronic brucellosis the IgG immunoglobulins may be detected either by the complement fixation test or the antihuman globulin (Coombs) test (Kerr *et al.*, *The Lancet* 1966, ii, 1181). The use of the three tests – namely, the agglutination test, the complement fixation test, and the antihuman globulin test, should usually make it possible to establish or exclude the diagnosis of brucellosis although not to state whether the disease is active.

An Outbreak of Postoperative Urinary Infections

Chemical disinfectants should be used in hospital only when physical methods of sterilisation are impossible or impracticable. (Public Health Laboratory Service, 1965). The story of an Exeter hospital outbreak is a case in point. Between January and June 1964, 37 of 133 patients acquired a postoperative urinary infection with *Pseudomonas aeruginosa* after operations on the prostate or bladder. The outbreak centred on the main male surgical ward of the hospital and was first ascribed to cross-infection from the ward sluice-room, where tests once again demonstrated the flair of pseudomonas for persisting in moist environments.

Despite a review of ward procedure, infections continued to appear, and the hospital operating-theatre then came under suspicion. Clear-cut evidence of theatre-acquired infection was obtained in a few patients, but the ultimate source of pseudomonas in the theatre took some months to track down. Eventually, bladder washings from two patients undergoing trans-urethral resection of the prostate were shown to contain pseudomonas only after the use of Bigelow's evacuator. This apparatus is a suction device for extracting crushed stones or prostatic fragments from the bladder. It comprises essentially a rubber bulb that can be filled with irrigating lotion and has attachments to a resectoscope through which the fluid is squirted into the bladder and to a glass bottle into which the fragments fall when sucked out. When the evacuator was dismantled, a heavy culture of pseudomonas was obtained from inside the rubber bulb where, in the intact instrument, the rubber was covered by the metal attachments for the resectoscope and the glass bottle. Until then, the Bigelow evacuator had been disinfected between patients by immersion in aqueous chlorhexidine, which would not of course have penetrated the metal-rubber interfaces. When autoclaving was substituted for chemical disinfection of the evacuator

the outbreak abruptly ceased. Retrospective scrutiny of all the evidence left little doubt that many if not most of the affected patients had acquired their infection at operation.

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DR. S. T. COWAN

The preceding review of the events during the calendar year 1966 was completed a few weeks before the retirement of Dr. S. T. Cowan on 31st January, 1967, which must nevertheless receive mention.

Dr. Cowan had been Deputy Director of the Service since 1964, a post which he held in conjunction with that of Administrative Director of the Central Public Health Laboratory, Colindale. He joined the Service in 1946 as Curator of the National Collection of Type Cultures, and held this office until his assumption of the deputy directorship. His ability as a microbiologist and his kindly wisdom as an administrator have been acknowledged not only within the Service, but also in the international sphere.

Dr. Cowan is succeeded by Dr. J. C. Kelsey, who has served for a number of years as Director of the Disinfection Reference Laboratory, and also as Editor, for the Service, of the *Monthly Bulletin of the Ministry of Health and Public Health Laboratory Service*.

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C. H. Jellard, B.M., F.C.Path.,
Dip.Bact. *(Director)*
Miss G. M. Churcher, M.B., Dip.Bact.

* Affiliated to the Routine Diagnostic Laboratory, Colindale.

PORTSMOUTH:

Public Health Laboratory, St. Mary's
General Hospital, East Wing,
Milton Road

Tel.: Portsmouth (STD 0705) 22331

D. J. H. Payne, M.B., F.C.Path.,
Dip.Bact. (*Director*)

C. S. Goodwin, M.D., Dip.Bact.

J. V. T. Gostling, M.A., M.B., M.R.C.S.,
M.C.Path.

D. A. Skan, M.B.E., M.B., F.C.Path.,
D.T.M. & H.

PRESTON:

Public Health Laboratory, Royal
Infirmary, Meadow Street

Tel.: Preston (STD 0772) 57886

L. Robertson, B.M., M.C.Path.,
Dip.Bact. (*Director*)

I. D. Farrell, B.Sc.

READING:

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Berkshire Hospital

Tel.: Reading (STD 0734) 52957

J. V. Dadswell, M.B., M.C.Path.
(*Director from July 1967*)

SALISBURY:

Public Health Laboratory, Odstock
Hospital

Tel.: Salisbury (STD 0722) 6020

P. J. Wormald, M.D., M.C.Path.
(*Director*)

SHREWSBURY:

Public Health Laboratory, Royal
Salop Infirmary

Tel.: Shrewsbury (STD 0743)
4684/5

A. C. Jones, M.B. (*Director*)

P. H. Everall, F.I.M.L.T.
(*Technical Officer*)

SOUTHAMPTON:

Public Health Laboratory, General
Hospital, Tremona Road

Tel.: Southampton (STD 0703)
76177

J. M. Graham, M.B., M.C.Path.,
Dip.Bact. (*Director*)

J. A. Tooth, M.B., M.C.Path.,
Dip.Bact.

SOUTHEND:

Public Health Laboratory, Westcliff
Hospital, Balmoral Road

Tel.: Southend (STD 0702) 45440

J. A. Rycroft, M.B., M.C.Path.,
Dip.Bact. (*Director*)

STAFFORD:

Public Health Laboratory, Martin
Street

Tel.: Stafford (STD 0785) 4377

W. L. Hooper, B.Sc., M.B., M.C.Path.,
Dip.Bact. (*Director*)

SUNDERLAND:

Public Health Laboratory, Havelock
Hospital, Hylton Road

Tel.: Sunderland (STD 0783) 56256

P. B. Crone, M.D., Dip.Bact. (*Director*)

SWANSEA:

Public Health Laboratory, Cockett
Road

Tel.: Swansea (STD 0792) 23041/2

W. Kwantes, M.B., F.C.Path.,
Dip.Bact. (*Director*)

TAUNTON:

Public Health Laboratory, Musgrove
Park Hospital

Tel.: Taunton (STD 0823) 5753

J. A. Boycott, D.M. (*Director*)
Miss P. Travains, B.Sc.

TRURO:

Public Health Laboratory, Royal
Cornwall Hospital (City), Infirmary
Hill

Tel.: Truro (STD 0872) 3029

G. I. Barrow, M.D., M.C.Path.,
Dip.Bact. (*Director*)

WAKEFIELD:

Public Health Laboratory, Wood
Street

Tel.: Wakefield (STD 0924) ~~2207~~ 7646

L. A. Little, M.B., F.C.Path.,
Dip.Bact. (*Director*)

H. Fennell, B.Sc.

WATFORD:

Public Health Laboratory, Watford
General Hospital, Peace Memorial
Wing, Rickmansworth Road
Tel.: Watford (STD 01 92) 21369

B. R. Eaton, M.B., M.C.Path., D.C.H.
(Director from 1st May, 1967)

WORCESTER:

Public Health Laboratory, Royal
Infirmary, Castle Street Branch
Tel.: Worcester (STD 0905)
25238/9

R. J. Henderson, M.D. (Director)
Miss H. G. Ross, M.B., D.T.M. & H.

WINCHESTER:

Public Health Laboratory, Royal
Hampshire County Hospital
Tel.: Winchester (STD 0962) 3807

M. H. Hughes, D.M., M.C.Path.,
D.T.M. & H., Dip.Bact. (Director)

REFERENCE LABORATORIES

These Laboratories normally receive specimens only from other laboratories within or without the Service, although the Diagnostic Reference Laboratory also receives routine work; for this reason it is included in the Directory of Constituent Laboratories (*see p 24*).

CROSS-INFECTION REFERENCE LABORATORY:

(incorporating the *Staphylococcus*
and *Streptococcus* Reference
Laboratories):

Central Public Health Laboratory,
Colindale Avenue, N.W.9.
Tel.: Colindale (STD 01 205) 7041

M. T. Parker, M.D., F.C.Path.,
Dip.Bact. (Director)

Mrs. E. A. Hall Asheshov, M.Sc.,
Dip.Bact.

W. D. Brighton, Ph.D.

Mrs. J. F. Bullimore, B.Sc.

J. E. Davies, B.Sc.

S. Fletcher, B.Sc.

J. H. Hewitt, M.Sc.

W. R. Maxted, F.I.M.L.T. (Senior
Technical Officer)

J. V. S. Pether, M.A., D.M.
D.T.M. & H., Dip.Bact.

B. T. Thom, M.B., Dip.Bact.

Mrs. A. G. Towers, B.Sc., M.B.,
M.C.Path. (part-time)

D. Kingston, M.A.*

O. M. Lidwell, D.Phil.* (Deputy
Director)

DIAGNOSTIC REFERENCE LABORATORY:

Central Public Health Laboratory,
Colindale Avenue, London, N.W.9.
Tel.: Colindale (STD 01 205) 7041

C. E. D. Taylor, M.A., M.D., M.C.Path.,
Dip.Bact. (Director: *see also p.24*)

Miss A. H. Antonis, M.B.

J. W. Kershaw, B.Sc.

G. V. Laubersheimer, F.I.M.L.T.
(Technical Officer)

D. A. McSwiggan, L.R.C.P.I.,
D.T.M. & H., Dip.Bact.
(Deputy Director)

DISINFECTION REFERENCE LABORATORY:

Central Public Health Laboratory,
Colindale Avenue, London, N.W.9.
Tel.: Colindale (STD 01 205) 7041

J. C. Kelsey, M.D., M.C.Path.,
Dip.Bact. (Director)

Mrs. I. M. Maurer, B.Sc.

*Members of the external scientific staff of the Medical Research Council.

DYSENTERY REFERENCE
LABORATORY:

Central Public Health Laboratory,
Colindale Avenue, London, N.W.9.
Tel.: Colindale (STD 01 205) 7041

Mrs. K. P. Carpenter, M.B., M.C.Path.,
Dip.Bact. (*Director*)
Mrs. J. M. Goodban, B.Sc.
Mrs. G. Wicks, B.Sc.

ENTERIC REFERENCE
LABORATORY:

Central Public Health Laboratory,
Colindale Avenue, London, N.W.9.
Tel.: Colindale (STD 01 205) 7041

E. S. Anderson, M.D., F.C.Path.,
Dip.Bact. (*Director*)
J. D. H. de Sa, M.Sc., Ph.D.
Miss C. M. Jones, B.Sc.
Miss V. M. Keleman (Mrs. Salter),
B.Sc., D.Phil., A.R.I.C.
Miss J. N. Mayhew, B.Sc.
Mrs. D. H. Perret, B.Sc., Ph.D.
Mrs. L. Ward, Dip.Tech.

LEPTOSPIROSIS REFERENCE
LABORATORY:

London School of Hygiene and
Tropical Medicine, Keppel Street,
London, W.C.1.
Tel.: Museum (STD 01 636) 3041 or
Langham (STD 01 580) 7621

L. H. Turner, M.B.E., M.D.,
D.T.M. & H. (*Director*)

MYCOLOGICAL REFERENCE
LABORATORY:

London School of Hygiene and
Tropical Medicine, Keppel Street,
London, W.C.1.
Tel.: Museum (STD 01 636) 3041 or
Langham (STD 01 580) 7621

I. G. Murray, M.B., M.C.Path.,
D.T.M. & H. (*Director*)
Miss C. M. Philpot, B.Sc.

MYCOPLASMA REFERENCE
LABORATORY:

Central Public Health Laboratory,
Colindale Avenue, London, N.W.9.
Tel.: Colindale (STD 01 205) 7041

B. E. Andrews, M.R.C.S., M.C.Path.,
Dip.Bact. (*Director*)
R. H. Leach, M.Sc., D.Phil.
(*Deputy Director*)
G. D. Windsor, B.Sc.

SALMONELLA REFERENCE
LABORATORY:

Central Public Health Laboratory,
Colindale Avenue, London, N.W.9.
Tel.: Colindale (STD 01 205) 7041

Mrs. J. Taylor, M.B., B.Sc., F.C.Path.,
D.P.H. (*Director*)
K. A. Bettelheim, M.Sc., D.I.C.
G. Fretwell, B.Sc.

TUBERCULOSIS REFERENCE
LABORATORY:

Institute of Preventive Medicine,
The Parade, Cardiff.
Tel.: Cardiff (STD 0222) 30108

J. Marks, M.D., F.C.Path., Dip.Bact.
(*Director*)
P. A. Jenkins, Ph.D.
J. L. Leat, B.Sc.

VENEREAL DISEASES
REFERENCE LABORATORY:

London Hospital Research Labora-
tories, Ashfield Street, London, E.1.
Tel.: Stepney Green (STD 01 790)
3008

A. E. Wilkinson, M.B., M.R.C.S.,
M.C.Path., (*Director, part-time*)
Miss N. A. Johnston, M.D., D.R.C.O.G.
(*part-time*)
Miss C. F. A. Rayner, B.Sc.
A. D. Seth, M.Sc.
Miss M. J. Tully, B.Sc.

VIRUS REFERENCE
LABORATORY:

Central Public Health Laboratory,
Colindale Avenue, London, N.W.9.
Tel.: Colindale (STD 01 205) 7041

A. D. Macrae, M.D., M.C.Path.,
Dip.Bact. (*Director*)
Miss M. O. Adams (Mrs. Roebuck),
M.B., Dip.Bact.
Mrs. P. Chakraverty, B.Sc.

Miss Y. E. Cossart (Mrs. Wills), M.B.,
B.Sc., M.C.Path., D.C.P.
J. Craske, M.B., Dip.Bact.
Miss A. M. Field, B.Sc.
Miss S. D. Gardner, M.B., Dip.Bact.
Miss R. Lawson, B.Sc.
J. R. McDonald, F.I.M.L.T.
(*Technical Officer*)
Mrs. E. V. Meurisse, B.Sc.
Mrs. M. S. Pereira, M.D.
(*Deputy Director*)
Mrs. E. M. Vandeveld, M.B., Dip.Bact.

SPECIAL LABORATORIES

COMPUTER TRIALS DEPARTMENT:

Central Public Health Laboratory,
Colindale Avenue, London, N.W.9.
Tel.: Colindale (STD 01 205) 7041

S. P. Lapage, M.B., M.C.Path.,
Dip.Bact. (*Director*)
Mrs. S. Bascomb, M.Sc., Ph.D.
M. A. Curtis, B.Sc.
W. R. Willcox, B.Sc.

FOOD HYGIENE LABORATORY:

Central Public Health Laboratory,
Colindale Avenue, London, N.W.9.
Tel.: Colindale (STD 01 205) 7041

Miss B. C. Hobbs, O.St.J., D.Sc.,
Dip.Bact. (*Director*)
A. C. Ghosh, B.Sc.
Miss D. Roberts, B.Sc.

EPIDEMIOLOGICAL RESEARCH
LABORATORY:

Central Public Health Laboratory,
Colindale Avenue, London, N.W.9.
Tel.: Colindale (STD 01 205) 7041

T. M. Pollock, M.B., M.R.C.P. (Glasg.)
(*Director*)
Miss C. L. Miller, B.M. (*part-time*)
D. L. Miller, M.D., D.P.H.
(*Deputy Director*)
J. G. Pope, B.Sc.
D. Reid, M.B.
Mrs. S. Polakoff, M.B.
Mrs. E. D. Vernon, B.Sc.

NATIONAL COLLECTION OF
TYPE CULTURES:

Central Public Health Laboratory,
Colindale Avenue, London, N.W.9.
Tel.: Colindale (STD 01 205) 7041

S. P. Lapage, M.B., M.C.Path.,
Dip.Bact. (*Curator*)
L. R. Hill, M.Sc. (*Deputy Curator*)
Miss J. Midgley, B.Sc.
R. J. Owens, B.Sc.
Miss J. Shelton, B.Sc.

EPIDEMIOLOGICAL RESEARCH
UNIT:

86, Dyer Street, Cirencester, Glos.
Tel.: Cirencester (STD 0285)
3745/3330

R. E. Hope-Simpson, O.B.E., M.R.C.S.
(*Director, part-time*)
P. G. Higgins, M.D., M.C.Path., Dip.
Bact.

STANDARDS LABORATORY
FOR SEROLOGICAL
REAGENTS:

Central Public Health Laboratory,
Colindale Avenue, London, N.W.9.
Tel.: Colindale (STD 01 205) 7041

Mrs. C. M. P. Bradstreet, M.B.,
M.C.Path., Dip.Bact. (*Director*)
Miss E. M. Bailey, B.Sc.
Mrs. M. W. Dighero, B.Sc.
Mrs. J. M. B. Edwards, M.B., M.C.Path.
(*Deputy Director, part-time*)
Miss G. J. Perry, B.Sc.
Miss A. J. Tannahill, B.Sc.

JUNIOR BACTERIOLOGISTS IN TRAINING

(Attending course at The London School of Hygiene and Tropical Medicine for Diploma in Bacteriology, 1966-67)

C. Dulake, M.R.C.S., M.C.Path.

G. Scrimgeour, M.B.

(Attending course at the University of Manchester for Diploma in Bacteriology, 1966-67)

T. N. Stanbridge, M.B., M.R.C.S.

STAFF ON SECONDMENT

J. F. Archer, M.B., Dip.Bact. *(to University of Sheffield)*

D. C. J. Bassett, M.B., Dip.Bact. *(to Trinidad Regional Virus Laboratory)*

P. Cavanagh, M.B., B.A.O., Dip.Bact. *(to London School of Hygiene and Tropical Medicine)*

H. W. K. Fell, M.B. *(to Group Pathology Laboratories, St. Stephen's Hospital, Chelsea, London)*

A. B. White, M.B. *(to St. George's Hospital, London)*

Hospital Pathological Laboratories—designated “Recognised”—at which arrangements are made for the examination of public health specimens for the Service

AYLESBURY

Stoke Mandeville Hospital, Aylesbury, Buckinghamshire.

BOLTON

Royal Infirmary, Bolton, Lancashire.

WIGAN

Royal Infirmary, Wigan, Lancashire.

Consultant Bacteriologists employed by Regional Hospital Boards in the Hospital Service, who are associated on a part-time basis with the Public Health Laboratory Service

F. A. J. BRIDGWATER, M.B., Dip.Bact.,

East Birmingham Hospital, Bordesley Green East, Birmingham, 9.
Tel.: Birmingham (STD 021) Victoria 4021.

S. I. JACOBS, M.D., M.C.Path.,

Bacteriology Laboratory, Monsall Hospital, Newton Heath, Manchester, 10.
Tel.: Manchester (STD 061) Collyhurst 2254.

Miss M. P. JEVONS, M.D., M.C.Path., Dip.Bact.

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Tel.: Flaxman (STD 01 352) 8161.

J. M. MOORE, M.D., M.C.Path.,

Bacteriology Laboratory, Doncaster Royal Infirmary, Doncaster, Yorkshire.
Tel.: Doncaster (STD 0302) 2286.

J. M. TALBOT, M.D., M.C.Path., Dip.Bact.,

Kingston Hospital Pathological Laboratory,
37 Coombe Road, Kingston-upon-Thames, Surrey.
Tel.: Kingston (STD 01 546) 9844.

W. R. G. THOMAS, M.B., M.R.C.S., M.C.Path., D.T.M. & H., Dip.Bact.,

Bacteriology Laboratory, Mayday Hospital, Mayday Road, Thornton Heath, Surrey.
Tel.: Thornton Heath (STD 01 684) 6999.

REFERENCE EXPERTS

In the following list the name of the expert who is responsible for the relevant examination is given. Reference experts normally receive specimens only from other laboratories within and without the Service. It should be added, however, that all regional and most area laboratories are undertaking the routine diagnosis of virus infections, and that several laboratories are undertaking the serological identification of members of the *Salmonella* group, the serological diagnosis of leptospiral infections, and the bacteriophage-typing of strains of *Staphylococcus aureus*. For this reason, enquiries on these subjects should usually be addressed to the local public health laboratory.

Anaerobes, identification

Professor C. L. Oakley, M.D., D.Sc., F.C.Path., F.R.S., Bacteriology Department, School of Medicine, Leeds, 2. Tel.: Leeds (STD 0533) 36171.

Anthrax bacilli, identification

A. J. H. Tomlinson, M.D., Bacteriological Laboratory (P.H.L.S.), Room 617, County Hall, London, S.E.1. Tel.: Waterloo (STD 01 928) 3467.

Anthrax, examination under Wool and Hair Regulations

T. F. Elias-Jones, M.B., M.C.Path., The City Laboratory, 23, Montrose Street, Glasgow, C.1. Tel.: Glasgow (STD 041) Central 9600, Ext. 2400.

H. G. M. Smith, M.B., Ph.D., Dip.Bact., Public Health Laboratory, 16-18, Edmund Street, Bradford, 5. Tel.: Bradford (STD 0274) 24314.

A. J. H. Tomlinson, M.D., Bacteriological Laboratory (P.H.L.S.), Room 617, County Hall, London, S.E.1. Tel.: Waterloo (STD 01 928) 3467.

Arizona group, identification

Mrs. J. Taylor, M.B., B.Sc., F.C.Path., D.P.H., Salmonella Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. Tel.: Colindale (STD 01 205) 7041.

Brucella, identification

D. J. H. Payne, M.B., F.C.Path., Dip.Bact., Public Health Laboratory, St. Mary's General Hospital, East Wing, Milton Road, Portsmouth. Tel.: Portsmouth (STD 0705) 22331.

Cholera and related vibrios, identification

Mrs. K. P. Carpenter, M.B., M.C.Path., Dip.Bact., Dysentery Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. Tel.: Colindale (STD 01 205) 7041.

Clostridium welchii, serological typing

Miss B. C. Hobbs, D.Sc., Dip.Bact., Food Hygiene Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. Tel.: Colindale (STD 01 205) 7041.

Coxsackie A viruses

D. R. Gamble, M.B., M.C.Path., Dip.Bact., Public Health Laboratory, West Park Hospital, Epsom. Tel.: Epsom (STD 01 39) 26633.

Cytomegaloviruses

H. Stern, M.B., Ph.D., M.C.Path., Virus Department, St. George's Hospital Medical School, Hyde Park Corner, London, S.W.1.
Tel.: Belgravia (STD 01 235) 4343, Ext. 147.

Diphtheria bacilli, identification

W. H. H. Jebb, M.D., F.C.Path., Public Health Laboratory, Radcliffe Infirmary, Oxford. Tel.: Oxford (STD 0092) 49231/2.

Disinfection

J. C. Kelsey, M.D., M.C.Path., Dip.Bact., Disinfection Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9.
Tel.: Colindale (STD 01 205) 7041.

Dysentery, amoebic, complement-fixation test for

Mrs. C. M. P. Bradstreet, M.B., M.C.Path., Dip.Bact., Standards Laboratory for Serological Reagents, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. Tel.: Colindale (STD 01 205) 7041.

Dysentery bacilli, typing

Mrs. K. P. Carpenter, M.B., M.C.Path., Dip.Bact., Dysentery Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. Tel.: Colindale (STD 01 205) 7041.

Encephalitis, acute infectious

A. D. Macrae, M.D., M.C.Path., Dip.Bact., Virus Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9.
Tel.: Colindale (STD 01 205) 7041.

Enteric Fever

- (a) Serological investigation of suspected cases and carriers.
 - (b) Phage-type determination of strains of typhoid and paratyphoid bacilli, and of *Salmonella typhimurium* and certain other salmonella serotypes.
- E. S. Anderson, M.D., F.C.Path., Dip.Bact., Enteric Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9.
Tel.: Colindale (STD 01 205) 7041.

Escherichia coli, typing

Mrs. J. Taylor, M.B., B.Sc., F.C.Path., D.P.H., Salmonella Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. Tel.: Colindale (STD 01 205) 7041.

Entomological specimens, investigation

B. R. Laurence, Ph.D., Department of Entomology, London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1.
Tel.: Museum (STD 01 636) 3041.

Farmer's lung, serological diagnosis

I. G. Murray, M.B., M.C.Path., D.T.M. & H., Mycological Reference Laboratory, London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1. *Tel.*: Museum (STD 01 636) 3041 *or* Langham (STD 01 580) 7621.

D. G. Davies, M.D., F.C.Path., Dip.Bact., Public Health Laboratory, Cumberland Infirmary, Carlisle. *Tel.*: Carlisle (STD 0228) 22332.

J. E. Jameson, M.R.C.S., Public Health Laboratory, Royal Sussex County Hospital, Brighton, 7. *Tel.*: Brighton (STD 0273) 63506.

B. Moore, M.D., B.Sc., F.C.Path., B.A.O., Public Health Laboratory, Church Lane, Heavitree, Exeter. *Tel.*: Exeter (STD 0392) 77833.

H. D. S. Morgan, M.R.C.S., M.C.Path., Dip.Bact., Public Health Laboratory, West Wales General Hospital, Glangwili, Carmarthen. *Tel.*: Carmarthen (STD 0267) 7271.

Professor Scott Thomson, M.D., F.R.C.P.E., F.C.Path., D.P.H., Public Health Laboratory, Institute of Pathology, Royal Infirmary, Cardiff. *Tel.*: Cardiff (STD 0222) 31918.

D. M. Weir, M.D., Immunology Unit, Department of Bacteriology, Edinburgh University Medical School, Teviot Place, Edinburgh.

Tel.: Edinburgh (STD 031) Newington 1011, *Ext.* 2256.

*Food Poisoning**

Miss B. C. Hobbs, D.Sc., Dip.Bact., Food Hygiene Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9.

Tel.: Colindale (STD 01 205) 7041.

Fungi (pathogenic), identification

I. G. Murray, M.B., M.C.Path., D.T.M. & H., Mycological Reference Laboratory, London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1. *Tel.*: Museum (STD 01 636) 3041 *or* Langham (STD 01 580) 7621.

Helminthological specimens, investigation

Professor G. S. Nelson, M.D., D.Sc., D.T.M. & H., D.A.P. & E., London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1. *Tel.*: Museum (STD 01 636) 3041 *or* Langham (STD 01 580) 7621.

Hydatid disease, complement-fixation test for

Mrs. C. M. P. Bradstreet, M.B., M.C.Path., Dip.Bact., Standards Laboratory for Serological Reagents, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale (STD 01 205) 7041.

Immunofluorescence

C. E. D. Taylor, M.A., M.D., M.C.Path., Dip.Bact., Diagnostic Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale (STD 01 205) 7041.

* Owing to the perishable nature of most foodstuffs, material for investigation from outbreaks of food poisoning should normally be sent to the nearest public health laboratory. The reference laboratory should be used mainly for non-perishable articles of food, especially when litigation may arise, and for the identification of strains.

Influenza

L. Hoyle, M.B., Public Health Laboratory, General Hospital, Northampton.
Tel.: Northampton (STD 0604) 34347.

Leptospiral infections

L. H. Turner, M.B.E., M.D., D.T.M. & H., London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1.
Tel.: Museum (STD 01 636) 3041 or Langham (STD 01 580) 7621.

Malaria

Professor P. C. C. Garnham, C.M.G., M.D., D.Sc., F.R.S., London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1.
Tel.: Museum (STD 01 636) 3041 or Langham (STD 01 580) 7621.

Meningococci, typing

Mrs. C. M. P. Bradstreet, M.B., M.C.Path., Dip.Bact., Standards Laboratory for Serological Reagents, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale (STD 01 205) 7041.

Mycoplasma

B. E. Andrews, M.R.C.S., M.C.Path., Dip.Bact., Mycoplasma Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale (STD 01 205) 7041.

Parasitic infections, serological diagnosis of

D. S. Ridley, B.Sc., M.D., M.C.Path., Department of Pathology, Hospital for Tropical Diseases, 4, St. Pancras Way, London, N.W.1.
Tel.: Euston (STD 01 387) 6441.

Pasteurella pseudotuberculosis

N. S. Mair, M.B., F.C.Path., D.C.H., D.P.H., Dip.Bact., Public Health Laboratory, Groby Road Hospital, Leicester.
Tel.: Leicester (STD 0533) 872283.

Plague, investigation

R. J. Henderson, M.D., Public Health Laboratory, Royal Infirmary, Castle Street Branch, Worcester. *Tel.*: Worcester (STD 0905) 25238/9.

Pneumococci, typing of, from epidemics

M. T. Parker, M.D., F.C.Path., Dip.Bact., Cross-Infection Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.*: Colindale (STD 01 205) 7041.

Poliomyelitis

A. D. Macrae, M.D., M.C.Path., Dip.Bact., Virus Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9.
Tel.: Colindale (STD 01 205) 7041.

Protective cabinets

O. M. Lidwell, D.Phil., Cross-Infection Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9.
Tel.: Colindale (STD 01 205) 7041.

Protozoological specimens, investigation

Professor P. C. C. Garnham, C.M.G., M.D., D.Sc., F.R.S., London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1.

Tel.: Museum (STD 636) 3041 or Langham (STD 01 582) 7621.

Psittacosis, diagnosis

A. D. Macrae, M.D., M.C.Path., Dip.Bact., Virus Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9.

Tel.: Colindale (STD 01 205) 7041.

Rabies, laboratory tests for diagnosis

Virus Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. Tel.: Colindale (STD 01 205) 7041.

Rickettsia

A. D. Evans, M.B., B.Sc., M.C.Path., Dip.Bact., Public Health Laboratory, Institute of Pathology, 3rd Floor, Royal Infirmary, Cardiff.

Tel.: Cardiff (STD 0222) 33101

Salmonella organisms, typing

Mrs. J. Taylor, M.B., B.Sc., F.C.Path., D.P.H., Salmonella Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. Tel.: Colindale (STD 01 205) 33101.

Smallpox, laboratory tests for diagnosis

A. D. Evans, M.B., B.Sc., M.C.Path., Dip.Bact., Public Health Laboratory, Institute of Pathology, 3rd Floor, Royal Infirmary, Cardiff.

Tel.: Cardiff (STD 0222) 33101.

J. H. Hale, O.B.E., M.D., F.C.Path., M.R.C.P., Public Health Laboratory, Institute of Pathology, General Hospital, Westgate Road, Newcastle upon Tyne, 4. Tel.: Newcastle (STD 0632) 38811, Ext. 297.

M. H. Hambling, M.D., M.C.Path., D.(Obst.)R.C.O.G., Dip.Bact., Public Health Laboratory, Bridle Path, York Road, Leeds, 15.

Tel.: Leeds (STD 0533) 645011.

A. D. Macrae, M.D., M.C.Path., Dip.Bact., Virus Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9.

Tel.: Colindale (STD 01 205) 7041.

K. McCarthy, M.D., M.C.Path., Bacteriology Department, Medical School, Ashton Street, Liverpool, 3. Tel.: Liverpool (STD 051) Royal 7983 and Royal 6022, Ext. 202.

Staphylococci, bacteriophage-typing

M. T. Parker, M.D., F.C.Path., Dip.Bact., Cross-Infection Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. Tel.: Colindale (STD 01 205) 7041.

Streptococci of Group A, typing

M. T. Parker, M.D., F.C.Path., Dip.Bact., Cross-Infection Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. Tel.: Colindale (STD 01 205) 7041.

Regional Typing Laboratories

(i) *Northern and South Eastern counties:* Cumberland, Co. Durham, Lancs., Northumberland, Westmorland, Yorks., Dorset, Hants., Kent, London, Surrey, Sussex.

M. T. Parker, M.D., F.C.Path., Dip.Bact., Cross-Infection Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.:* Colindale (STD 01 205) 7041.

(ii) *Eastern Counties:* Beds., Cambs., Derby, Essex, Herts., Hunts., Leics., Lincs., Norfolk, Northants., Notts., Rutland, Suffolk.

Miss J. M. Boissard, M.R.C.S., Public Health Laboratory, Tennis Court Road, Cambridge. *Tel.:* Cambridge (STD 0223) 55526.

(iii) *Western Counties:* Berks., Bucks., Cheshire, Cornwall, Devon, Glos., Heref., Oxon., Salop., Somerset, Staffs., Warw., Wilts., Worcs.

W. H. H. Jebb, M.D., F.C.Path., Public Health Laboratory, Radcliffe Infirmary, Oxford. *Tel.:* Oxford (STD 0092) 49231/2.

(iv) *Wales.*

Professor Scott Thomson, M.D., F.R.C.P.E., F.C.Path., D.P.H., Public Health Laboratory, Institute of Pathology, 3rd Floor, Royal Infirmary, Cardiff. *Tel.:* Cardiff (STD 0222) 33101.

Toxoplasmosis

North

G. B. Ludlam, M.D., F.C.Path., D.T.M. & H., D.L.O., Public Health Laboratory, Bridle Path, York Road, Leeds, 15.

Tel.: Leeds (STD 0533) 645011.

South (excluding London)

W. Kwantes, M.B., F.C.Path., Dip.Bact., Public Health Laboratory, Cockett Road, Swansea. *Tel.:* Swansea (STD 0792) 23041/2.

London

D. G. Fleck, M.D., M.C.Path., Dip.Bact., Public Health Laboratory, St. George's Hospital, Tooting Grove, London, S.W.17.

Tel.: Balham (STD 01 672) 1255.

Trichinosis, examination of rats and pigs

Professor G. S. Nelson, M.D., D.Sc., D.T.M. & H., D.A.P. & E., London School of Hygiene & Tropical Medicine, Keppel Street, London, W.C.1.

Tel.: Museum (STD 01 636) 3041 or Langham (STD 01 580) 7621.

Tubercle bacilli and other mycobacteria

J. Marks, M.D., F.C.Path., M.R.C.P., Dip.Bact., Tuberculosis Reference Laboratory, Institute of Preventive Medicine, The Parade, Cardiff.

Tel.: Cardiff (STD 0222) 30108.

Regional Centres for Tuberculosis Bacteriology

Bristol: H. R. Cayton, M.B., M.C.Path., Public Health Laboratory, Canynge Hall, Whatley Road, Bristol, 8. *Tel.:* Bristol (STD 0272) 38257.

Liverpool: G. C. Turner, M.D., M.C.Path., Public Health Laboratory, 126, Mount Pleasant, Liverpool, 3. *Tel.:* Liverpool (STD 051) Royal 3636/7.

London: C. H. Collins, F.I.M.L.T., Bacteriological Laboratory (PHLS), Room 617, County Hall, Westminster Bridge, London, S.E.1.
Tel.: Waterloo (STD 01 928) 3467.

Manchester: J. D. Abbott, M.D., M.C.Path., Dip.Bact., Public Health Laboratory, Withington Hospital, Manchester, 20. *Tel.:* Manchester (STD 061) Didsbury 2416.

Newcastle: J. B. Selkon, M.B., D.C.P., Public Health Laboratory, Institute of Pathology, General Hospital, Westgate Road, Newcastle upon Tyne, 4. *Tel.:* Newcastle (STD 0632) 38811, *Ext.* 297.

Wakefield: L. A. Little, M.B., F.C.Path., Dip.Bact., Public Health Laboratory, Wood Street, Wakefield. *Tel.:* Wakefield (STD 0924) 2207.

Winchester: M. H. Hughes, D.M., M.C.Path., D.T.M. & H., Dip.Bact., Public Health Laboratory, Royal Hampshire County Hospital, Winchester. *Tel.:* Winchester (STD 0962) 3807.

*Typhus fever, serological tests**

Virus Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9. *Tel.:* Colindale (STD 01 205) 7041.

Venereal diseases

A. E. Wilkinson, M.B., M.R.C.S., M.C.Path., Venereal Diseases Reference Laboratory, London Hospital Research Laboratories, Ashfield Street, London, E.1. *Tel.:* Stepney Green (STD 01 790) 3008.

Venereal diseases, Treponemal immobilisation test

A. E. Wilkinson, M.B., M.R.C.S., M.C.Path., Venereal Diseases Reference Laboratory, London Hospital Research Laboratories, Ashfield Street, London, E.1. *Tel.:* Stepney Green (STD 01 790) 3008.

Midlands

P. J. L. Sequiera, M.B., The Central Serology Laboratory, Withington Hospital, West Didsbury, Manchester, 20.
Tel.: Manchester (STD 061) Didsbury 7683.

North

J. H. Hale, O.B.E., M.D., F.C.Path., M.R.C.P., Public Health Laboratory, Institute of Pathology, General Hospital, Westgate Road, Newcastle upon Tyne, 4. *Tel.:* Newcastle (STD 0632) 38811, *Ext.* 297.

* The Weil-Felix test can be carried out in all constituent laboratories of the Service, and also in a number of hospital laboratories. Only sera giving a doubtful reaction should be sent to the Virus Reference Laboratory.

VACCINES AND OTHER IMMUNOLOGICAL MATERIALS OBTAINABLE
THROUGH THE PUBLIC HEALTH LABORATORY SERVICE

For the addresses of PHLS laboratories see pp. 21-29

Typhus Vaccine

Stocks are held by the PHLS laboratories at:

Birmingham	London (Colindale)
Bristol	Manchester
Cambridge	Newcastle
Exeter	Oxford
Leeds	Sheffield
Liverpool	Cardiff (a)

Rabies Vaccine

Stocks are held by the PHLS laboratories at:

Liverpool
London (Colindale)
Newcastle
Cardiff (a)

Anthrax Vaccine

Stocks are held by the PHLS laboratories at:

Bradford
Liverpool
London (Colindale)

Gamma Globulin

Gamma globulin prepared from the pooled plasma of normal healthy adults is obtainable on request from any laboratory of the Service. So far as supplies allow, it is issued for the protection of women in contact with rubella during the first 3 months of pregnancy. It is also issued for contacts of measles and infectious hepatitis in circumstances of special risk.

In addition to normal gamma globulin, a stock of gamma globulin prepared from the blood of persons recently vaccinated against smallpox is held for the treatment of cases of generalised vaccinia, eczema, vaccinatum, accidental vaccinia infections endangering the eye, and, in special circumstances, for the protection of unvaccinated smallpox contacts. This anti-vaccinia gamma globulin may be obtained from the PHLS laboratories at:

Birmingham	Liverpool
Bristol	London (Colindale)
Cambridge	Manchester
Cardiff (a)	Newcastle
Gloucester	Oxford
Leeds	Sheffield
Leicester	

Material for intradermal diagnostic tests

Frei antigen for Lymphogranuloma inguinale, Brucellin for Undulant fever, Trichina antigen for Trichinosis, Hydatid antigen for Hydatid disease, and cat-scratch fever antigen can be obtained from the PHLS Standards Laboratory, which also issues, to any pathologist, Kveim antigen for sarcoidosis. Enquiries relating to fungal antigens should be addressed to the PHLS Mycology Reference Laboratory.

Notes on other immunological materials NOT obtainable through the Public Health Laboratory Service

1. Antisera for therapeutic use

Obtainable through the Hospital Pathological Service.

2. Yellow fever inoculation

A list of centres can be obtained from the Ministry of Health, Alexander Fleming House, Elephant & Castle, London, S.E.1.

3. TABC, cholera and other vaccines

Most of these are available commercially.

4. Smallpox Vaccine

Obtainable from Public Health Departments of Local Authorities (Counties, County Boroughs and London Boroughs).

APPENDIX I

COMMITTEES AND WORKING PARTIES

Food Investigation

Chairman and Secretary: J. H. McCoy, M.B.; D.P.H.

E. S. Anderson, M.D., F.C.Path., Dip.Bact.	Mrs. J. Taylor, M.B., B.Sc., F.C.Path., D.P.H.
R. W. S. Harvey, M.D., M.C.Path., Dip.Bact.	A. J. H. Tomlinson, M.D.
Miss B. C. Hobbs, D.Sc., Dip.Bact.	S. Brightwell, M.Sc., D.I.C., A.R.I.C.
W. Kwantes, M.B., F.C.Path., Dip.Bact.	(Messrs. J. Sainsbury, Ltd., to give technical advice on trade matters)
H. D. S. Morgan, M.R.C.S., M.C.Path., Dip.Bact.	M. Ingram, M.A., Ph.D. (Low Temperature Research Station)
H. G. M. Smith, M.B., Ph.D., Dip.Bact.	

Steering Committee on Antibiotic Resistance of Pathogens

Chairman: M. T. Parker, M.D., F.C.Path., Dip.Bact.

Secretary: A. L. Furniss, M.D., Dip.Bact.

J. D. Abbott, M.D., M.C.Path., Dip.Bact.	T. M. Pollock, M.B., M.R.C.P.(Glasg.)
E. S. Anderson, M.D., F.C.Path., Dip.Bact.	Mrs. J. Taylor, M.B., B.Sc., F.C.Path., D.P.H.
Mrs. K. P. Carpenter, M.B., M.C.Path., Dip.Bact.	A. E. Wright, M.D., M.C.Path., D.P.H., Dip.Bact.
J. C. Kelsey, M.D., M.C.Path., Dip.Bact.	

Standing Committee on Bacteriological Examination of Water Supplies

Chairman: W. H. H. Jebb, M.D., F.C.Path.

Secretary: L. A. Little, M.B., F.C.Path., Dip.Bact.

G. I. Barrow, M.D., M.C.Path., Dip.Bact.	C. Metcalf Brown, M.D., D.P.H.
J. A. Boycott, D.M.	(Society of Medical Officers of Health)
R. D. Gray, M.D., F.C.Path., D.P.H.	N. P. Burman, B.Sc., Ph.D.
J. E. Jameson, M.R.C.S.	(Metropolitan Water Board)
J. H. McCoy, M.B., D.P.H.	G. U. Houghton, Ph.D., F.R.I.C. (South Essex Waterworks Company)
B. Moore, M.D., B.Sc., F.C.Path., B.A.O.	A. E. Martin, M.D., D.P.H.
R. Pilsworth, M.D., Dip.Bact.	(Ministry of Health)
J. G. Pope, B.Sc.	E. Windle Taylor, C.B.E., M.A., M.D., F.C.Path., D.P.H. (Metropolitan Water Board)
J. A. Rycroft, M.B., M.C.Path., Dip.Bact.	
A. J. Kingsley Smith, B.M., M.C.Path.	
Miss J. M. Watkinson, B.Sc.	
R. G. Allen, B.Sc., Ph.D., F.Inst.P.	
(Water Research Association)	

Standing Committee on Virology

Chairman and Secretary: A. D. Macrae, M.D., M.C.Path., Dip.Bact.

Mrs. C. M. P. Bradstreet, M.B., M.C.Path., Dip.Bact.	M. H. Hambling, M.D., M.C.Path., D.(Obst.)R.C.O.G., Dip.Bact.
Miss S. K. R. Clarke, M.D., M.C.Path.	P. G. Higgins, M.D., M.C.Path., Dip.Bact.
A. D. Evans, M.B., B.Sc., M.C.Path., Dip.Bact.	L. Hoyle, M.B.
J. H. Hale, O.B.E., M.D., F.C.Path., M.R.C.P.	J. Nagington, M.D., Dip.Bact.
	G. B. B. White, M.R.C.S., M.C.Path., Dip.Bact.

Veterinary Standing Advisory Committee

Veterinary Members

W. D. Macrae, M.R.C.V.S., D.V.S.M.
A. B. Paterson, Ph.D., B.Sc., M.R.C.V.S.,
D.V.S.M., F.R.I.C.
A. J. Stevens, M.A., B.V.Sc., M.R.C.V.S.,
Dip.Bact.

P.H.L.S. Members

E. S. Anderson, M.D., F.C.Path., Dip.Bact.
D. J. H. Payne, M.B., F.C.Path., Dip.Bact.
A. J. H. Tomlinson, M.D.

Advisory Sub-Committee on Application and Report Forms

Chairman: G. T. Cook, M.D., F.C.Path.

Secretary: R. Pilsworth, M.D., Dip.Bact.

Standing Committee on Laboratory Buildings

Chairman: S. T. Cowan, M.D., D.Sc., F.C.Path., Dip.Bact.

Secretary: R. H. Westlake

Advisory Sub-Committee on Laboratory Supplies

Chairman: A. J. H. Tomlinson, M.D.

Joint Secretaries: S. W. H. Aust and A. Waltho

Library Advisory Committee

Joint Chairmen: (H. G. M. Smith, M.B., Ph.D., Dip.Bact.)
(Miss B. H. Whyte, M.A., A.L.A.)

Secretary: Miss B. H. Whyte, M.A., A.L.A.

Standing Committee on Office Equipment and Methods

Chairman: J. H. Hale, O.B.E., M.D., F.C.Path., M.R.C.P.

Joint Secretaries: S. W. H. Aust and A. Waltho

Standing Committee on Technicians

Chairman: A. J. H. Tomlinson, M.D.

Secretary: J. W. Bushell

Working Party on Rubella

Chairman: A. D. Macrae, M.D., M.C.Path., Dip.Bact.

Secretary: D. Reid, M.B.

Mrs. C. M. P. Bradstreet, M.B., M.C.Path.,
Dip.Bact.

Miss S.K.R. Clarke, M.D., M.C.Path.

Miss A. M. Field, B.Sc.

J. H. Hale, O.B.E., M.D., F.C.Path.,
M.R.C.P.

M. H. Hambling, M.D., M.C.Path.,
D.(Obst.)R.C.O.G., Dip.Bact.

D. N. Hutchinson, M.B., Dip.Bact.

W. F. Lane, M.B., M.Sc., F.C.Path., D.P.H.

Miss C. L. Miller, B.M.

J. G. Pope, B.Sc.

R. H. Westlake

G. B. B. White, M.R.C.S., M.C.Path.,
Dip.Bact.

J. E. M. Whitehead, M.B., M.C.Path.,
Dip.Bact.

Weekly Summary Working Party

Chairman: T. M. Pollock, M.B., M.R.C.P.(Glasg.)

Secretary: Mrs. E. D. Vernon, B.Sc.

H. R. Cayton, M.B., M.C.Path.
Miss L. M. Dowsett, M.D., F.C.Path.
M. H. Hughes, D.M., M.C.Path.,
D.T.M. & H., Dip.Bact.
J. C. Kelsey, M.D., M.C.Path., Dip.Bact.
G. J. G. King, M.B., F.C.Path., Dip.Bact.
S. P. Lapage, M.B., M.C.Path., Dip.Bact.
E. R. Mitchell, M.B., Dip.Bact.
B. Moore, M.D., B.Sc., F.C.Path., B.A.O.

J. G. Pope, B.Sc.
J. O'H. Tobin, B.M., M.C.Path., Dip.Bact.
Professor Scott Thomson, M.D.,
F.R.C.P.E., F.C.Path., D.P.H.
R. H. Westlake
W. B. Fletcher, A.M.R., F.S.S. (*Records
Officer, Bristol Public Health Dept.*)
B. K. Kelly, M.A. (*Medical Research
Council Computer Services Centre*)

Working Party on Epidemic Non-Bacterial Gastro-Enteritis

Chairman: B. Moore, M.D., B.Sc., F.C.Path., B.A.O.

Secretary: Miss S. K. R. Clarke, M.D.

G. T. Cook, M.D., F.C.Path.
M. H. Hughes, D.M., M.C.Path.,
D.T.M. & H., Dip.Bact.
J. E. Jameson, M.R.C.S.
A. D. Macrae, M.D., M.C.Path., Dip.Bact.
D. L. Miller, M.D., D.P.H.
E. R. Mitchell, M.B., M.C.Path., Dip.Bact.
T. D. F. Money, M.B., D.R.C.O.G.
L. Robertson, B.M., M.C.Path., Dip.Bact.

J. O'H. Tobin, B.M., M.C.Path., Dip.Bact.
J. E. M. Whitehead, M.B., M.C.Path.,
Dip.Bact.
N. Wood, M.D., B.Sc.
P. Henderson, M.D., D.P.H. (*Ministry of
Education*)
A. T. Roden, M.D., D.P.H. (*Ministry of
Health*)

Working Party on Brucellosis

Chairman: D. J. H. Payne, M.B., F.C.Path., Dip.Bact.

Secretary: J. G. Wallace, B.M., D.C.P., Dip.Bact.

G. I. Barrow, M.D., M.C.Path., Dip.Bact.
J. A. Boycott, D.M.
Mrs. C. M. P. Bradstreet, M.B., M.C.Path.,
Dip.Bact.
L. A. Little, M.B., F.C.Path., Dip.Bact.
T. M. Pollock, M.B., M.R.C.P.(Glasg.)

Miss P. M. Poole, M.D., M.C.Path., B.A.O.,
Dip.Bact.
L. Robertson, B.M., M.C.Path., Dip.Bact.
Mrs. J. D. Coghlan, B.Sc., Ph.D.
(*University of Edinburgh*)

Working Party on Farmer's Lung

Chairman and Secretary: I. G. Murray, M.B., M.C.Path., D.T.M. & H.

Mrs. C. M. P. Bradstreet, M.B., M.C.Path.,
Dip.Bact.
W. D. Brighton, Ph.D.
D. G. Davies, M.D., F.C.Path., Dip.Bact.
J. E. Jameson, M.R.C.S.
B. Moore, M.D., B.Sc., F.C.Path., B.A.O.

H. D. S. Morgan, M.R.C.S., M.C.Path.,
Dip.Bact.
Professor Scott Thomson, M.D.,
F.R.C.P.E., F.C.Path., D.P.H.
D. M. Weir, M.D. (*Department of
Bacteriology, Edinburgh University
Medical School*)

Working Parties on Acute Respiratory Virus Infections

(working in collaboration with the Medical Research Council Working Party)

Group I: Acute Respiratory Virus Infections in General Practice

Chairman: P. G. Higgins, M.D., M.C.Path., Dip.Bact.

Joint Secretaries: (R. E. Hope-Simpson, O.B.E., M.R.C.S.)
(D. L. Miller, M.D., D.P.H.)

Group II: Acute Respiratory Virus Infections in Retail Shopworkers

Chairman and Secretary: T. D. F. Money, M.B., D.R.C.O.G.

Group III: Acute Respiratory Virus Infections among Children in Hospital

Chairman—Laboratory Group: J. O'H. Tobin, B.M., M.C.Path., Dip.Bact.

Chairman—Clinical Group: Professor S. D. M. Court, M.D., F.R.C.P., D.C.H. (University of Newcastle)

Secretary: Miss P. M. Poole, M.D., M.C.Path., B.A.O., Dip.Bact.

Working Party on Whooping Cough

Chairman: E. H. Gillespie, M.B., F.C.Path.

Secretary: J. D. Abbott, M.D., M.C.Path., Dip.Bact.

Miss A. H. Antonis, M.B.
H. R. Cayton, M.B., M.C.Path.
Miss L. M. Dowsett, M.D., F.C.Path.
J. A. N. Emslie, M.B., Dip.Bact.
C. S. Goodwin, M.D., Dip.Bact.
J. V. T. Gostling, M.A., M.B., M.R.C.S., M.C.Path.
J. H. Hale, O.B.E., M.D., F.C.Path., M.R.C.P.
R. J. Henderson, M.D.
P. G. Higgins, M.D., M.C.Path., Dip.Bact.
H. H. Johnston, D.Phil.
L. A. Little, M.B., F.C.Path., Dip.Bact.
N. S. Mair, M.B., F.C.Path., D.C.H., D.P.H., Dip.Bact.
E. R. Mitchell, M.B., M.C.Path., Dip.Bact.
B. Moore, M.D., B.Sc., F.C.Path., B.A.O.
Mrs. S. Polakoff, M.B.
T. M. Pollock, M.B., M.R.C.P. (Glasg.)
Miss P. M. Poole, M.D., M.C.Path., B.A.O., Dip.Bact.
Professor Scott Thomson, M.D., F.R.C.P.E., F.C.Path., D.P.H.
H. G. M. Smith, M.B., Ph.D., Dip.Bact.
Miss M. E. M. Thomas, M.B., B.Sc., D.P.H.

G. C. Turner, M.D., M.C.Path.
P. J. Wormald, M.D., M.C.Path.
A. E. Wright, M.D., M.C.Path., D.P.H., Dip.Bact.
Professor J. P. Duguid, B.Sc., M.D., F.C.Path. (Bacteriology Department, University of Edinburgh)
T. F. Elias-Jones, M.B., M.C.Path. (City Laboratory, Glasgow)
R. R. Gillies, M.D., M.C.Path., D.P.H. (Medical School, University of Edinburgh)
F. T. Perkins, M.Sc., Ph.D. (Immunological Products Control, Medical Research Council)
N. W. Preston, M.D., M.C.Path., Dip.Bact. (Department of Bacteriology, University of Manchester)
A. F. B. Standfast, M.A., D.Sc., Dip.Bact. (Vaccine Department, Lister Institute of Preventive Medicine)
I. Taylor, M.D., F.R.C.P., D.P.H. (Public Health Department, Greater London Council)
J. F. Warin, M.D., D.P.H. (Medical Officer of Health, City of Oxford)

Working Party on Commercially Prepared Culture Media

Chairman: P. B. Crone, M.D., Dip.Bact.

Secretary: M. H. Hughes, D.M., M.C.Path., D.T.M. & H., Dip.Bact.

W. H. Bound, F.I.M.L.T.
Miss L. M. Dowsett, M.D., F.C.Path.
A. Partridge, F.I.M.L.T.

R. H. Westlake
A. E. Wright, M.D., M.C.Path., D.P.H., Dip.Bact.

Working Party on Routine Sampling Procedures

Chairman and Secretary: A. L. Furniss, M.D., Dip.Bact.

G. I. Barrow, M.D., M.C.Path., Dip.Bact.
R. W. S. Harvey, M.D., B.Sc., M.C.Path., Dip.Bact.
L. A. Little, M.B., F.C.Path., Dip.Bact.
J. H. McCoy, M.B., D.P.H.
B. Moore, M.D., B.Sc., F.C.Path., B.A.O.

APPENDIX II

PUBLICATIONS BY MEMBERS OF THE STAFF OF THE PUBLIC HEALTH LABORATORY SERVICE DURING 1966

ANDERSON, E. S.

Influence of the Δ transfer factor on the phage sensitivity of salmonellae. *Nature, Lond.*, 1966, 212, 795.

ANDERSON, E. S.

Possible importance of transfer factors in bacterial evolution. *Nature, Lond.*, 1966, 209, 637.

ANDREWS, B.E., BEARE, A.S., McDONALD, J.C., ZUCKERMAN, A.J. and TYRRELL, D.A.J.

Further trials of live influenza vaccine. *Brit.med.J.*, 1966, i, 637.

ASHESHOV, Elizabeth H.

Chromosomal location of the genetic elements controlling penicillinase production in a strain of *Staphylococcus aureus*. *Nature, Lond.*, 1966, 210, 804.

ASHESHOV, Elizabeth H.

Loss of antibiotic resistance in *Staphylococcus aureus* resulting from growth at high temperature. *J.gen.Microbiol.*, 1966, 42, 403.

ASHESHOV, Elizabeth H. and WINKLER, K. C.

Staphylococcus aureus strains in the '52, 52A, 80, 81 complex'. *Nature, Lond.*, 1966, 209, 638.

BANGHAM, D. R., BRADSTREET, C. M. P. and MITCHELL, D. N.

Kveim test. [Letter] *Tubercle, Lond.*, 1966, 47, 238.

BANGHAM, D. R., BRADSTREET, C. M. P. and MITCHELL, D. N.

Wanted - spleen tissue. [Letter] *Brit.med.J.*, 1966, ii, 526.

BARROW, G. I., MILLER, D. C. and JOHNSON, D. L.

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APPENDIX III

AWARDS AND EXTERNAL OFFICES ACCEPTED BY MEMBERS OF THE SERVICE DURING 1966

Dr. E. T. C. Spooner	..	..	C.M.G. in the Birthday Honours List.
Professor A. C. Cunliffe	..	..	Assistant Registrar of the College of Pathologists.
Professor R. E. O. Williams	..	..	Fellow of the Royal College of Physicians; Member of the Council of the College of Pathologists.
Dr. J. W. Howie	..	..	President of the College of Pathologists; United Kingdom Representative on the Technical Committee serving the Pakistan-SEATO Cholera Research Laboratory; Member of the Army Pathology Advisory Committee.
Mr. D. V. T. Fairrie	..	..	C.B.E. in the Birthday Honours List.
Dr. R. Blowers	..	..	Member of the Council of the College of Pathologists.
Dr. Joan M. Boissard	..	..	Fellow of University College, Cambridge.
Dr. S. T. Cowan	..	..	Member of the Executive Committee of the International Association of Microbiological Societies; Life Member of the International Committee on the Nomenclature of Bacteria; International Representative of the Society for General Microbiology.
Dr. L. M. Dowsett	..	..	Chairman of the Norwich Division of the British Medical Association.
Dr. J. G. P. Hutchison	..	..	Part-time Lecturer at the University of Aston in Birmingham.
Dr. W. H. H. Jebb	..	..	Member of the Board of Governors of the United Oxford Hospitals.
Dr. S. P. Lapage	..	..	Member of the Association of Clinical Pathologists Working Party on Data Processing; Member of the Committee of the Microbial Systematics Group of the Society of General Microbiology; Member of the Judicial Commission of the International Committee on Bacteriological Nomenclature; Secretary of the United Kingdom National Committee of the British Commonwealth Collection of Micro-organisms.
Dr. J. H. McCoy	..	..	Member of the Committee of the Society for Applied Bacteriology.
Dr. T. D. F. Money	..	..	Member of Norwich City Health Committee; Member of Norwich N.H.S. Executive Council.
Dr. I. G. Murray	..	..	Visiting Consultant for the World Health Organisation - Mycoses in Sudan.
Dr. T. M. Pollock	..	..	Member of the Council of the Section of Epidemiology and Preventive Medicine of the Royal Society of Medicine.
Dr. J. B. Selkon	..	..	Member of the Research Committee of the British Tuberculosis Association.

Dr. C. E. D. Taylor	..	..	Member of the Council and Honorary Secretary of the Section of Epidemiology and Preventive Medicine of the Royal Society of Medicine; Member of the Council of the Section of Pathology of the Royal Society of Medicine; Member of the Advisory Committee in Pathology to the North West Metropolitan Regional Hospital Board; Member of the Laboratory Automation Trials Group of the Ministry of Health.
Dr. J. O'H. Tobin	..	..	President of the Pathology Section of Manchester Medical Society.
Dr. G. C. Turner	..	..	Honorary Lecturer in Bacteriology in the University of Liverpool.
Dr. L. H. Turner	Secretary of the World Health Organisation Taxonomic Sub-Committee on Leptospira.
Dr. A. E. Wilkinson	Editor of the British Journal of Venereal Diseases.

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